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United States General Accounting Office

Report to the Chairman, Subcommittee on
Oversight, Committee on Ways and
Means, House of Representatives

COMPLETED

DATA COMMUNICATIONS

Progress in Installing IRS' Communications Replacement System

Information Management and
Technology Division

B-224135

February 22, 1989

The Honorable J. J. Pickle
Chairman, Subcommittee on Oversight
Committee on Ways and Means
House of Representatives

Dear Mr. Chairman:

During your February 6, 1987, hearing on the Internal Revenue Service (IRS), you requested that we assist the Subcommittee in its oversight and evaluation of IRS' efforts to install a new \$156-million Communications Replacement System.¹ The new system is to replace IRS' existing data communications system, which has experienced reliability and capacity problems. The new system consists of computers and software that enable IRS' computer terminals to access IRS' mainframe computers to process taxpayer inquiries and correct tax returns. The new system will also provide security features and statistics on system performance.

As requested, we have monitored the testing of the new system at IRS' Martinsburg Computing Center located in Martinsburg, West Virginia, and its installation at service centers in Fresno, California and Austin, Texas. This report discusses (1) the results of system acceptance testing, (2) the status of IRS' decision on whether to accept the system from the contractor, and (3) IRS' progress in installing the new system since our last report to you in March 1988.²

Although tests of the new system at Martinsburg identified about 900 software problems, most of these had been corrected as of January 1989. However, because the contractor had not corrected all of the problems and had not delivered acceptable documentation describing how the system's software works and how it can be used, as of January 1989 IRS had not formally accepted the system. IRS decided to install the new system at service centers anyway because it believed these problems would not adversely affect the system's ability to process taxpayer inquiries or make corrections to tax returns. Our review indicates that this decision was reasonable and that IRS has made satisfactory progress

¹Statement of James R. Watts, Associate Director, to the Subcommittee on Oversight, House Committee on Ways and Means (GAO/T-IMTEC-87-1, Feb. 6, 1987).

²Internal Revenue Service: Computer Readiness for 1988 Filing Season (GAO/IMTEC-88-31, Mar. 31, 1988).

in installing the system at its service centers. As of December 1988, the Communications Replacement System was installed in all 10 centers.

Results of Acceptance Testing

Since June 1987, IRS has been conducting tests at its Martinsburg Computing Center to determine if the new Communications Replacement System's hardware and software meet IRS' specifications. This testing, called system acceptance testing, assesses (1) system performance (the system's ability to process a certain work load in a given period of time), (2) the reliability of the system's hardware components, and (3) the system software's conformance to specifications. While IRS identified about 900 problems with the system's software during these tests, as of November 30, 1988, all but 16 had been corrected. IRS officials responsible for managing the project have concluded that these problems do not appear to adversely affect IRS' ability to process taxpayer inquiries or make corrections to tax returns.

According to the Communications Replacement System's project manager, the most significant unresolved software-related problem is associated with software that provides IRS managers with statistical reports on terminal response times. During acceptance testing, this software failed to provide correct terminal response time information. Terminal response time is the time it takes a user's inquiry to pass from the user's terminal through the communications processor to the mainframe computer (where the inquiry is processed) and back to the terminal.

While the absence of information on terminal response times does not adversely affect IRS' ability to process taxpayer inquiries or correct tax returns, it does affect its ability to monitor how well the new system is performing and quickly identify response time problems. Until the response time problem is resolved, IRS is periodically checking response times using stopwatches. The IRS project manager is currently negotiating with the contractor to establish a schedule for correcting this and the other remaining problems.

Status of System Acceptance

According to IRS officials responsible for managing the project, IRS will not accept the system until the contractor resolves the outstanding software problems and delivers acceptable software documentation (descriptions of how the system's software works and how it can be used). Between April 27 and June 5, 1988, the contractor delivered documentation for the software it developed, but IRS officials found that the documentation did not meet IRS' content and format requirements. For

example, the documentation did not list all of the functions that the system's software performs. By December 1988, IRS and the contractor had established a schedule and procedures for providing acceptable system documentation to IRS by April 1989.

As of December 31, 1988, IRS was withholding \$4.3 million in payments from the contractor pending the delivery of acceptable system documentation and correction of software problems. This amount includes payments for software development and documentation and for the hardware and software already installed at the Martinsburg center. Although IRS is withholding payments, the contractor is continuing to provide maintenance on the hardware and software at Martinsburg. Once IRS accepts the system, the contractor will be compensated in accordance with the terms of the contract.

IRS' Progress in Installing the New System

We previously reported that IRS planned to require the new system to pass all hardware and software testing at the Martinsburg Computing Center before it would allow service centers to install the system.³ However, in November 1987 IRS officials responsible for managing the project concluded that none of the remaining problems would have an adverse effect on service center operations and decided to proceed with nationwide system installation. By December 1988, the Communications Replacement System had been installed in all 10 IRS service centers.

IRS officials, recognizing that there were risks associated with installing the new system in its service centers before it met all contractual requirements, implemented a strategy that included safeguards for reducing the risk of nationwide problems. These safeguards included requiring that the system successfully demonstrate its operational capability in a production environment, one service center at a time.

The Fresno service center was the first center selected to install and test the new system. According to IRS officials, installing the system in a production environment at Fresno allowed IRS to identify and correct any hardware and software deficiencies beyond those found at the Martinsburg center before installing the system at other centers. In addition, the officials believed that the new system would provide the Fresno center with immediate production benefits, including an increase in the number

³Data Communications: Thorough Testing and Workload Analyses Needed for IRS' Processors (GAO/IMTEC-87-3BR, Oct. 14, 1986).

of terminals at the center and a system that could process a larger number of transactions than the older system it replaced.

In February 1988, IRS reported that the system had successfully demonstrated that it could operate reliably in a production environment at Fresno. During this testing, no critical hardware or software problems occurred that would delay installing the system at other service centers. On the basis of this information, IRS decided to allow installation at the Austin service center in February 1988.

In March 1988, IRS reported that the system's hardware components installed at Austin successfully completed a reliability test. However, one critical software problem related to long response times was identified. In May 1988 IRS reported that the response time problem had been resolved.

Because the system had once again demonstrated its reliability in a production environment, IRS reaffirmed its decision to install the system at the remaining service centers, one center at a time. By using this phased installation approach, the Communications Replacement System was installed in all 10 IRS service centers by December 1988. On the basis of our review of Communications Replacement System status reports from November 1987 to December 1988, the unresolved software problems did not appear to adversely affect computer center operations.

Conclusions

IRS' decision to proceed with nationwide installation of the new system was reasonable and its progress in installing the new system has been satisfactory. Installing the new system one service center at a time gave IRS the opportunity to study the system's behavior as each service center was brought on-line.

While the remaining software problems and the lack of satisfactory documentation do not appear to adversely affect the processing of returns, they do affect IRS' ability to monitor system performance and quickly identify response time problems. Therefore, we believe IRS acted correctly in withholding payments on the new system until the contractor corrects all outstanding software-related problems identified during acceptance testing at the Martinsburg Computing Center and provides acceptable system documentation.

Objectives, Scope, and Methodology

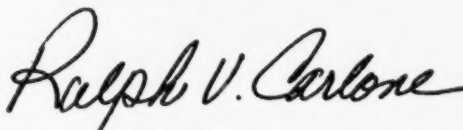
We carried out our audit work from November 1987 to December 1988 at IRS' Martinsburg Computing Center in Martinsburg, West Virginia; its national office in Washington, D.C.; and at the Fresno, California and Austin, Texas service centers. Our information was obtained by reviewing IRS' weekly status reports and by attending weekly status meetings between the contractor and IRS officials. In addition, we reviewed IRS' System Acceptance Test Plan, obtained supporting documentation, observed testing conducted at the Martinsburg Computing Center, and interviewed IRS and contractor personnel responsible for conducting acceptance tests on the new system. We also conducted on-site visits during January and March 1988 to the Fresno and Austin service centers to observe the new system in operation. Our work was performed in accordance with generally accepted government auditing standards.

Agency Comments

We discussed the contents of this report with the IRS Assistant Commissioner for Computer Services and other responsible IRS officials. They agreed with the report's contents and provided some additional information, which has been incorporated where appropriate.

As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the date of this letter. At that time, we will send copies to the Secretary of the Treasury; the Commissioner, IRS; the Director, Office of Management and Budget; interested congressional committees; and will make copies available to others upon request. This report was prepared under the direction of James R. Watts, Associate Director. Other major contributors are listed in the appendix.

Sincerely yours,



Ralph V. Carlone
Assistant Comptroller General

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